

CLAIMS

1. Arrangement of an interior panel of an aircraft passenger cabin, with which a space (19) enclosed by the interior panelling (20) and an outer skin (33) of an aircraft is filled; which arrangement will provide protection against unforeseen fire situations; in which arrangement the interior panelling (20) comprises honeycomb panelling (22) made up of a honeycomb formation (46) of several honeycombs (27, 28) arranged side by side, whose honeycomb body (23) on the end of the cross section (29) of the honeycomb body is supported by and glued to a cover layer (30) supported above and below the honeycomb formation (46) such that by means of a top-supported cover layer (30a) facing the passenger cabin (21), and a bottom-supported cover layer (30b) facing a space (19), and a honeycomb body (23) sandwiched between the two cover layers (30a, 30b) a layer design of the honeycomb panelling (22) is created, which layer design is arranged so as to extend parallel to the outer skin (33) and follow the curvature of the outer skin (33), wherein the combination comprises the following characteristics, according to which the honeycomb formation (46) used is made of paper- or aramide honeycombs (27, 28) or of a mixed combination of both honeycomb types; on whose cross section (29) of the honeycomb body to both ends (42) of the honeycomb bodies a CFK cover layer (43) is positioned; and/or further CFK insulation layers (45) are glued to the outer surface of the respective cover layer (30a, 30b) supported above and below the honeycomb formation (46), which cover layer (30a, 30b) comprises a CFK or GFK; and/or the layer design of the honeycomb panelling (22) comprises further honeycomb formations (47) which are additionally stacked on and glued to the honeycomb formation (46) used.
2. The arrangement of claim 1, wherein a burn-through-proof barrier layer (49) is sandwiched between a honeycomb formation (46) comprising paper honeycombs (27) and a further stacked honeycomb formation (47) which is made from paper honeycombs (27), as well as being sandwiched between further stacked honeycomb formations (48) which are made of paper

honeycomb (27), wherein said burn-through-proof barrier layer (49) is glued onto the adjacent honeycomb formations (46 to 48).

3. The arrangement of claims 1 and 2, wherein a cover layer (30a, 30b) comprising GFK is positioned on the cross section (29) of the honeycomb body of a honeycomb formation (46 to 48) comprising paper honeycombs (27), on both ends (42) of the honeycomb body, wherein said cover layer (30a, 30b) is enclosed by a burn-through-proof foil (11).
- 10 4. The arrangement of claim 1, wherein a first arrangement (50) of interior panelling (20) with a CFK cover layer (43) each resting above and below the honeycomb formation (46) used, and a second arrangement (51) of identical design arranged in a laminar way, are adjacent to each other, wherein their adjacent CFK cover layers (43), which are a top-supported cover layer (30a) of the first arrangement (50); and a bottom-supported cover layer (30b) of the second arrangement (51) or vice versa, are glued together.
- 15 5. The arrangement of claim 4, wherein further arrangements of the same type, up to a final nth arrangement, are arranged in a laminar way and adjacent to each other in series, wherein the cover layers (30a, 30b) which are adjacent to each other and lying one on top of the other, are glued, wherein the top-supported or bottom-supported cover layer (30a, 30b) of the second arrangement 51 is glued onto a cover layer (30a, 30b) of the serially following arrangement.
- 20 6. The arrangement of claims 1 and 3 to 5, wherein in addition a first burn-through-proof CFK insulation layer (45) is glued onto the outer surface of the top-supported and/or the bottom-supported cover layer (30a, 30b) which comprises a second and a third to an nth burn-through-proof CFK insulation layer (45) which ends the layer design of the honeycomb panelling (22) which is glued onto the adjacent support areas of the cover layers (30a, 30b).
- 25 7. The arrangement of claim 2, wherein the construction of the honeycomb panelling (22), apart from that first CFK barrier layer (49), is additionally

supplemented by a second CFK barrier layer (52), which is supported towards the inner surface of the respective cover layer (30a, 30b) and towards the paper honeycombs (27) and is glued to the latter.

- 5 8. The arrangement of claim 3, wherein the paper honeycombs (27) of the individual honeycomb formation (46 to 48) have been replaced by aramide honeycombs (Nomex honeycombs).
9. The arrangement of claim 5, wherein the individual CFK insulation layer (45) comprises a thick or thin CFK insulation layer.
- 10 10. The arrangement of claim 9, wherein the thin CFK insulation layer (45) comprises a burn-through-proof plastic foil.
- 15 11. The arrangement of claim 7, wherein the first and second CFK barrier layer (49, 52), as well as the further CFK barrier layers (53), comprise a thick or thin CFK barrier layer.
- 20 12. The arrangement of claim 11, wherein the further CFK barrier layers (53) comprise a thin CFK barrier layer.
13. The arrangement of one of claims 11 and 12, wherein the thin CFK barrier layers (49, 52, 53) comprise a burn-through-proof plastic foil.
- 25 14. The arrangement of claim 1, wherein a point of adhesive bond (54) of the glued honeycomb panelling elements is implemented using a burn-through-proof adhesive means, preferably a resin, into which various resin components are integrated, or that the point of adhesive bond (54) of the honeycomb panelling elements is embodied under the influence of heat and pressure to which said elements are technologically exposed in an enclosed space.
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15. The arrangement of claim 14, wherein the point of adhesive bond (54) of the glued-together honeycomb panelling elements is made non-detachable and burn-through proof through the influence of the flames of a locally acting fire.
- 5 16. The arrangement of claim 3 or 6, wherein an insulation package (55) is arranged on the GFK cover layer (30b) supported below the honeycomb formation (46 to 48) or the burn-through-proof CFK insulation layer (45) whose outer surface faces the outer skin (33), wherein said insulation package (55) comprises burn-through-proof insulation which is enclosed by a burn-through-proof foil (11), or comprises the burn-through-proof insulation (56) or the latter and non-burn-through-proof insulation (57), which are arranged side by side, or comprises the non-burn-through-proof insulation (57) into which a burn-through-proof barrier layer (58) is integrated, wherein the barrier layer extends without interruption through the non-burn-through-proof insulation (57) right to the circumference of the insulation (57).  
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- 15 17. The arrangement of claim 16, wherein the bottom-supported GFK cover layer (30b) and the burn-through-proof CFK insulation layer (48) comprise a threaded drill hole (59) which extends perpendicular to the surface of this GFK cover layer (30b).  
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- 25 18. The arrangement of one of claims 16 and 17, wherein the insulation package (55) comprises a hole-like leadthrough (60) which is congruent with a threaded drill hole (59), provided the insulation package (55) is aligned to the outer surface of the bottom-supported GFK cover layer (30b) or of the burn-through-proof CFK insulation layer (45).
19. The arrangement of one of claims 16 to 18, wherein the insulation package (55) is attached to the bottom-supported GFK cover layer (30b) by means of a burn-through-proof connection element (61) which is fed through the hole-like leadthrough (60) and which can be screwed into the threaded drill hole (59).  
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20. Insulation system for an outer skin (33) of a vehicle, comprising:
  - a plurality of honeycombs (27, 28) arranged side by side;  
wherein each of the plurality of honeycombs (27, 28) has a honeycomb body (23) each having both ends;
  - 5 at least two cover layers (30) including a top-supported cover layer (30a) and a bottom-supported cover layer (30b);  
wherein the honeycomb bodies are supported by and glued to the at least two cover layers (30) such that the top-supported cover layer (30a) is arranged for facing an interior of the vehicle, and the bottom-supported cover layer (30b) is arranged for facing the outer skin;
  - 10 wherein the honeycomb bodies (23) are sandwiched between the at least two cover layers (30a, 30b);  
wherein the honeycombs are paper- or aramide honeycombs (27, 28);  
a CFK layer;
  - 15 wherein the CFK layer is respectively arranged on both ends of the honeycomb bodies.
21. The insulation system of claim 20, further comprising:
  - 20 further CFK insulation layers (45) which are glued to outer surfaces of the at least two cover layers (30a, 30b).
22. The insulation system of one of claims 20 or 21, wherein the at least two cover layers (30a, 30b) further comprise at least one of a further CFK layer, a GFK layer, and further honeycomb formations (47) additionally stacked on and glued to the plurality of honeycombs.